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EXAMINER	
HARPER, V PAUL	
ART UNIT	**PAPER NUMBER**
2654	

DATE MAILED: 02/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/027,934	WANG, YUNBIAO	
	Examiner	Art Unit	
	V. Paul Harper	2654	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-9 and 11-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *1 and 14* is/are allowed.

6)☒ Claim(s) *4-9,11-13,17-21* is/are rejected.

7)☒ Claim(s) *3,15 and 16* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. **Claim 3** is objected to because it depends upon a cancelled claim (claim 2). For the purpose of the following rejections it is assumed to depend directly from claim 1. Furthermore, **claim 16** is objected to because it depends upon claim 3.

2. **Claim 15** is objected to because it depends upon a cancelled claim (claim 2). For the purpose of the following rejections it is assumed to depend directly from claim 1.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 4-9, 11-13, and 17-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Roberts (US Patent 4,829,578), hereinafter referred to as Roberts, in view of Basburg-Ertem et al. (US Patent Application Publication 2002/0041678 A1), hereinafter referred to as Basburg-Ertem.

Regarding **claim 4**, Roberts discloses a speech detection and recognition apparatus for use with background noise of varying levels. Roberts' disclosure includes the following:

- defining a time reference level period (abstract; col. 2, lines 63-66, during a given length of time);
- receiving an input signal including noise and possible a signal of interest (col. 2, lines 5-10, detects speech in the presence of noise);
- calculating a reference level as a function of the power of a first portion of the input signal over the reverence level adjustment period (col. 3, lines 1-5, calculated from time periods which precede each start-of-speech);
- defining a reference level adjustment time period (col. 2, lines 42-45, lines 63-66, level set during times when there is no speech);
- comparing the reference level against the power of the input signal subsequent to the first portion (col. 2, lines 63-67, amplitude exceeds the start-of-speech threshold);
- when said comparing does not satisfy the condition repeatedly and successively for reference level adjustment the time period, changing the reference level to a function of the power of a portion of input signal subsequent to the first portion and then repeating said comparing (abstract; col. 2, line 65 through col. 3, line 5; background level is used to alter detection thresholds either before or after speech; Fig. 10; adjust threshold).

Roberts also teaches "when said comparing satisfies a condition, generating an activation signal ... and then repeating said comparing (col. 2, lines 61-67; generating a start-of-speech indication; col. 2, lines 33-45, comparing during successive time periods).

But Roberts does not specifically teach "when said comparing satisfies a condition, generating an activation signal for controlling activation of the transmitter."

However, the examiner contends that this concept was well known in the art, as taught by Basburg-Ertem.

In the same field of endeavor, Basburg-Ertem teaches a method for noise reduction. Basburg-Ertem's teachings include the use of a voice activity detector where a determination is made of the presence of speech in every frame to support discontinuous transmission (¶[0022]).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Roberts by specifically providing the features, as taught by Basburg-Ertem, because it is well known in the art at the time of invention for the purpose of implementing discontinuous transmission (Basburg-Ertem, ¶[0022]).

Regarding **claim 5**, Roberts in view of Basburg-Ertem teaches everything claimed, as applied above (see claim 4). In addition, Roberts teaches:

- said changing step setting the reference level higher than the power of the subsequent portion (Figs. 9 and 10);

Regarding **claim 6**, Roberts in view of Basburg-Ertem teaches everything claimed, as applied above (see claim 5). In addition Roberts teaches:

- dividing the input signal into a succession of voice signal frames (col. 4, lines 56-70);
- processing the input signal on a frame by frame basis (Fig. 5, item 323);

- said calculating and comparing steps being repeated in order for each of the voice signal frames (abstract, repeated calculation);

But Roberts does not specifically teach "said activating transmission being on a frame by frame basis." However, this is taught by Basburg-Ertem (¶[0022], discontinuous transmission determined for every frame).

Regarding **claim 7,** Roberts in view of Basburg-Ertem teaches everything claimed, as applied above (claim 4), in addition Roberts teaches:

- dividing the input signal into a succession of voice signal frames (abstract; col. 4, lines 56-60);
- repeating said comparing in order for each of the voice signal frames (abstract; col. 4, lines 56-60; Figs, 3a and 3b);
- calculating a level of the input signal for a single current frame prior to each step of comparing (abstract; repeating, col. 2, lines 64-68);

But Roberts does not specifically teach "activating transmission of a frame of the input signal in response to the activation signal; and processing the input signal with a codec on a frame by frame basis." However, the examiner contends that these concepts were well known in the art, as taught by Basburg-Ertem.

In the same field of endeavor, Basburg-Ertem teaches a method for noise reduction. Basburg-Ertem's teachings include the use of a voice activity detector in an encoder where a determination is made of the presence of speech in every frame to support discontinuous transmission (¶[0022]).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Roberts by specifically providing the features, as taught by Basburg-Ertem, because it is well known in the art at the time of invention for the purpose of implementing discontinuous transmission (Basburg-Ertem, ¶[0022]).

Regarding **claim 8**, Roberts in view of Basburg-Ertem teaches everything claimed, as applied above (see claim 4). In addition, Roberts teaches the follwing:

- initializing the reference level as a threshold between assumed noise and the valid signal (Fig. 6; INITIALIZE_VARIABLES; col. 2, line 61 through col. 3, line 5; a given length of time);
- wherein said condition includes a test for determining if the level of the input signal is substantially higher than the reference level (col. 2, lines 63-67, amplitude is on a certain side of the threshold); and
- resetting the reference level adjustment time period when said step of comparing determines that the level of the input signal is substantially higher than the reference level, prior to performing said step of repeating (col. 3, predetermined amount of time cannot start until the end of the speech and thus the time is necessarily reset upon detection or end of speech).

Regarding **claim 9**, Roberts discloses a speech detection and recognition apparatus for use with background noise of varying levels. Roberts' disclosure includes the following:

- an input node to provide an input signal (col. 2, lines 5-10, detects speech with necessary input node);
- a reference node to provide a reference signal, the reference signal being a function of the power of a first portion of the input signal (abstract; col. 2, lines 35-45, thresholds; col. 3, lines 1-5, calculated from periods that precede the start of speech);
- a comparator operatively coupled to said nodes and to said transmitter [see below] to compare the power of the input signal subsequent to the first portion with the reference signal and to provide an activation control when a compared relation between the input signal and the reference signal satisfies a condition (abstract; col. 2, lines 35-45, compare the amplitude; level indicates presence of speech; col. 2, lines 61-67, speech status indicator);
- a first generator coupled to said comparator and controlled by said comparator to generate an activation signal to said transmitter in response to the activation control (col. 2, lines 38-45; level indicates the presence of speech);
- a timer control coupled to said comparator and determining elapsed time when the control is continuously and repeatedly absent, and in response to the elapsed time exceeding a predetermined time, outputting a time control (col. 3, lines 1-5; time periods before and after speech; col. 4, lines 56-67; fixed frame size); and

- a second generator coupled to said timer control, generating the reference signal to said reference node and dynamically changing a level of the reference signal in response to the time control, the changed reference signal being a function of the power of a portion of a portion of the input signal subsequent to the first portion (abstract, col. 3, lines 1-6, after the following of end-of-speech).

Roberts also teaches generating a start-of-speech indication (col. 2, lines 61-67) and comparing during successive time periods (col. 2, lines 33-45), but Roberts does not specifically teach the use of "a transmitter; and a comparator operatively coupled to said nodes and to said transmitter ... to provide an activation control." However, the examiner contends that this concept was well known in the art, as taught by Basburg-Ertem.

In the same field of endeavor, Basburg-Ertem teaches a method for noise reduction. Basburg-Ertem's teachings include the use of a voice activity detector where a determination is made of the presence of speech in every frame to support discontinuous transmission (¶[0022]).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Roberts by specifically providing the features, as taught by Basburg-Ertem, because it is well known in the art at the time of invention for the purpose of implementing discontinuous transmission (Basburg-Ertem, ¶[0022]).

Regarding **claim 11**, Roberts in view of Basburg-Ertem teaches everything claimed, as applied above (see claim 9). In addition, Roberts teaches:

- a calculator coupled to said input node to determine input signal power for a frame of the input signal (abstract; col. 2, lines 22-25; col. 4, lines 56-60; calculating amplitude level from portions of audio); and
- said comparator comparing the input signal power with the reference level and providing the activation control when the input signal level substantially exceeds the reference level (col. 2, lines 38-45; level indicates the presence of speech).

Regarding **claim 12**, Roberts in view of Basburg-Ertem teaches everything claimed, as applied above (see claim 11). In addition, Roberts teaches "each of said calculator, comparator and transmitter operating on a frame by frame basis for successive frames of the input signal" (abstract; repeated calculation).

Regarding **claim 13**, Roberts discloses a speech detection and recognition apparatus for use with background noise of varying levels. Roberts' disclosure includes the following:

- means for receiving an input signal (col. 2, lines 5-10, detects speech in the presence of noise);
- means for determining a reference noise power threshold as a function of the power of a first portion of the input signal (col. 3, lines 1-5, calculated from time periods which precede each start-of-speech);

- means for providing a succession of activation signals indicating speech by comparing power of corresponding successive frames of an input signal with the reference noise power threshold (abstract, repeated calculation).
- means for dynamically changing the reference noise power threshold when no activation signal is provided for a substantial predefined continuous time period representing a plurality of successive frames, the changed reference noise power threshold being a function of the power of a portion of the input signal subsequent to the first portion (abstract; background level is used to alter detection thresholds; col. 2, line 65 through col. 3, line 5; background level is used to alter detection thresholds either before or after speech; Fig. 10; adjust threshold).

But Roberts does not specifically teach "means for transmitting the frames successively in response to successive ones of the activation signals." However, the examiner contends that this concept was well known in the art, as taught by Basburg-Ertem.

In the same field of endeavor, Basburg-Ertem teaches a method for noise reduction. Basburg-Ertem's teachings include the use of a voice activity detector where a determination is made of the presence of speech in every frame to support discontinuous transmission (¶[0022]).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Roberts by specifically providing the features, as taught by Basburg-Ertem, because it is well known in the art at the time of

invention for the purpose of implementing discontinuous transmission (Basburg-Ertem, ¶[0022]).

Regarding **claim 17**, Roberts in view of Basburg-Ertem teaches everything claimed, as applied above (see claim 4). In addition Roberts teaches "[a] computer readable storage media having computer readable code implementing a method for activation that is dynamically adaptive to a level of noise mixed in the input signal, the code including statements for performing the method of claim 4" (col. 5, lines 55-65).

Regarding **claim 18**, Roberts in view of Basburg-Ertem teaches everything claimed, as applied above (see claim 5). In addition, Roberts teaches "[a] computer readable storage media having computer readable code implementing a method for data transmission that is dynamically adaptive to a level of noise mixed with valid data in the input signal, the code including statements for performing the method of claim 5" (col. 5, lines 55-65).

Regarding **claim 19**, Roberts in view of Basburg-Ertem teaches everything claimed, as applied above (see claim 6). In addition, Roberts teaches "[a] computer readable storage media having computer readable code implementing a method for voice activated speech transmission that is dynamically adaptive to a level of noise mixed with valid speech in the input signal, the code including statements for performing the method of claim 6" (col. 5, lines 55-65).

Regarding **claim 20**, Roberts in view of Basburg-Ertem teaches everything claimed, as applied above (see claim 7). In addition, "[a] computer readable storage media having computer readable code implementing a method for voice activated speech transmission that is dynamically adaptive to a level of noise mixed with valid speech in the input signal, the code including statements for performing the method of claim 7" (col. 5, lines 55-65, also see the rejection for claim 5 for "voice activated speech transmission").

Regarding **claim 21**, Roberts in view of Basburg-Ertem teaches everything claimed, as applied above (see claim 8). In addition, Roberts teaches "[a] computer readable storage media having computer readable code implementing a method for data transmission that is dynamically adaptive to a level of noise mixed with valid data in the input signal, the code including statements for performing the method of claim 8" (col. 5, lines 55-65, also see the rejection for claim 5 for "method for data transmission").

Allowable Subject Matter

4. Claims 1 and 14 are allowed.

It is noted that the closest prior art of record, Roberts (U.S. Patent 4,829,578), teaches the repeated calculation and detection of noise level thresholds, but Roberts does not teach conducting a reference level adjustment if a comparison satisfies a reference level adjustment condition, the reference level adjustment condition testing

whether there is a lack of transition between the presence of the signal of interest in the input signal and the absence of the signal of interest in the input signal for a predetermined time period; and adjusting the reference level when said reference level adjustment condition is satisfied. Thus, independent claim 1 is allowable over the prior art of record because the cited prior art alone or in combination, does not fairly suggest or disclose the claimed combination of features.

Citation of Pertinent Art

5. The following prior art made of record but not relied upon is considered pertinent to the applicant's disclosure:

- Christoph (U.S. Patent Application Publication 2004/0125962 A1) discloses a method for dynamically adjusting a noise level threshold.
- Terada et al. (U.S. Patent Application Publication 2002/0021798 A1) disclose a voice switching system where a voice detection threshold is dynamically computed.

Response to Arguments

6. The following arguments from the applicant filed 12/22/2005 have been fully considered but they are not persuasive.

On page 9, the Applicant argues that Roberts does not teach the method for reference signal adjustment as taught by claim 1, and the Examiner agrees, as indicated above in §4. However, Roberts does teach that the background amplitude

level only be calculated from time periods which precede each start-of-speech indication by a predetermined amount and/or which come after the end-of speech-indication (col. 3, lines 1-6), which the Examiner maintains corresponds to the reference signal limitations given in claims 4, 9 and 13 (see rejections above).

The remaining arguments are either moot in view of new grounds for rejection necessitated by amendment or were applied to claims that are now indicated as allowable.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to V. Paul Harper whose telephone number is (571) 272-7605. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richemond Dorvil can be reached on (571) 272-7602. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

1/25/06

V. Paul Harper
Patent Examiner
Art Unit 2654